LoggerNet Data Collection Process

LoggerNet is a computer program that is used to get data stored by Campbell Scientific Dataloggers and make it available for other computer applications to retrieve and process.

Stage and Gate Monitor and Gate Control at HC1

The tipping bucket rain gauge has two hoppers on a teeter-totter like mechanism. When one hopper fills up it tips the balance sending and electric pulse to the datalogger. Each hopper holds 0.01" of rain so each pulse is stored as 1/100 of an inch of rain.

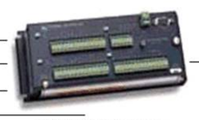
Tipping Bucket Rain Gauge

Sensors measure properties of the environment and convert them to either a voltage or a digital value.

Temperature and Humidity Sensor

The datalogger measures the sensor voltage at a programmed time interval, then coverts it to a digital value and stores it along with the time it occurred.

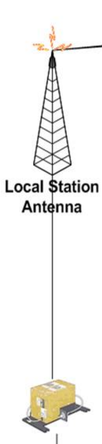
SDI-12 Connection



CR10X-TD Datalogger

The datalogger can be programmed to do intermediate processing so the data is stored in common units such as feet or degrees Fahrenheit.

The datalogger can also calculate averages along with the maximum and minimum value that occurred during a specified time interval.



The data stored in the datalogger is maintained until the internal memory is full. Then the oldest data is overwritten.
Typically this allows the datalogger to store from a few months to over a year of data.

For sensors that produce digital values, the values are read from the sensor at a programmed time interval and stored with the time of the reading.

SDI-12 is a communication format used for the datalogger to ask the sensor for the digital values.

SDI-12 Connection

Shaft Encoder Measure Stage

The shaft encoder has a tape attached to a float. As the water level rises or falls the tape turns the wheel on the shaft. The sensor reads the water level based on how far the tape moves. This digital water level is sent when requested by the datalogger.

Sigma9000 Autosampler

Automated Sampler operation is monitored and triggered by the program in the datalogger.

Sampling can be based on a time interval or calculation of the water flow.

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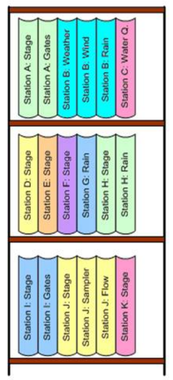

LoggerNet server is the public library for the data collection process. The information stored by the dataloggers is periodically collected and filed in an ordered data collection.
This collection is accessible over the computer network by all the clients that have permission and know the data retrieval protocol.

The LoggerNet Server also acts as a messenger to relay requests to the field stations. This allows remote clock checks, program downloads, and setting station calibrations from any computer on the district network.

LDMP2 Data Server

District WAN (Microwave or Other)

Some applications such as the Grapher and Numeric Display allow data to be monitored as it is collected by the LoggerNet server. This allows managers to monitor environmental changes as they happen, Even on the other side of the district

Additional applications can be created to incorporate graphics or provide displays using a web browser.

The Hydrology & Hydraulics Division gets the data as it is being collected by LoggerNet through the LDMP2 Data Server and stores it in a database.

Data is retrieved through the LDMP2 Data Server once a day and converted to array format. The converted data files are then sent to the Environmental Monitoring and Assessment Dept. (EMA) for processing by the data processors.

EMA validates, processes and then archives the data.

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EMA
Good Data, Good Science, Good Decisions
Environmental Monitoring & Assessment Department